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(New) A dehydroxylated mesoporous silica film as recited in claim 25, wherein said gas-phase species and said physisorbed species are removed from said porous film by applying a vacuum on said porous film.

28. (New) A dehydroxylated mesoporous silica film as recited in claim 24, wherein said gas-phase species and said physisorbed species are removed from said porous film by applying a flowing forming gas or inert gas.

(New) A dehydroxylated mesoporous silica film as recited in claim 26, wherein said gas-phase species and said physisorbed species are removed from said porous film by applying a flowing forming gas or inert gas.

30. (New) A dehydroxylated mesoporous silica film as recited in claim 24, wherein said surfactant containing silica precursor solution comprises alkyl-substituted silica precursors.

31. (New) A dehydroxylated mesoporous silica film as recited in claim 25, wherein said surfactant containing silica precursor solution comprises alkyl-substituted silica precursors.

(New) A dehydroxylated mesoporous silica film as recited in claim 26, wherein the surfactant containing silica precursor solution comprises alkyl-substituted silica precursors.

(New) A dehydroxylated mesoporous silica film as recited in claim 2, wherein the surfactant containing silica precursor solution comprises alkyl-substituted silica precursors.

34. (New) A dehydroxylated mesoporous silica film as recited in claim 28, wherein the surfactant containing silica precursor solution comprises alkyl-substituted silica precursors.

(New) A dehydroxylated mesoporous silica film as recited in claim 29, wherein the surfactant containing silica precursor solution comprises alkyl-substituted silica precursors.